

STATE OF MISSOURI  
**DEPARTMENT OF NATURAL RESOURCES**


Bob Holden, Governor • Stephen M. Mahfood, Director

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**MEMORANDUM**

**DATE:** OCT 18 2002

**TO:** Air Pollution Control Program Staff

**FROM:** Roger D. Randolph, Director  
Air Pollution Control Program, ALPD 

**SUBJECT:** Process for Calculating the Number of Annual Hours of  
Operation Under the Best Available Control Technology  
(BACT) Procedure

New construction or major modification subject to Section (8) of the construction permit rule must comply with the BACT analysis. BACT is defined in 10 CSR 6.020(2)(B)5 as:

“an emission limitation (including a visible emission limit) based on the maximum degree any proposed installation or major modification which the director on a case-by-case basis, taking into account energy, environmental and economic impacts and other costs, determines is achievable for the installation or major modification through application of production processes or available methods, systems and techniques, including fuel cleaning or treatment or innovative fuel combustion techniques for control of the pollutant. . .”

The number of hours of operation within an annual period that a piece of equipment or process operates, influences the final BACT determination. The following procedure will be used to calculate the maximum number of hours of operation in a 12-month period for individual emission units, under the BACT procedure.

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1. Research the current and past emission limitations set by the State of Missouri and other states for like and/or similar sources. Before each BACT evaluation, this step has to be performed to discover any improving control technologies. The following minimum information will be needed:
  - a. The type of emission unit (e.g. the make, model, and size);
  - b. The air pollutant and the emission limitation required of the emission unit;
  - c. Any control equipment that will be installed in order to meet the emission limitation, and the cost of control in dollars per ton of air pollutant removed;
  - d. Any hours of operation limitation that is being placed on the emission unit; and
  - e. Whether the emission limitation was based upon a BACT analysis or Lowest Achievable Control Technology analysis.
2. Based upon the emission limitation and the corresponding hours of operation limitation (if any) found during the research, calculate the air pollutant's annual allowable emission rate. This would be the potential to emit of the proposed emission unit if the same emission limitation and hours of operation limitation that was placed on the researched emission unit is placed on the proposed emission unit.
3. Determine the worst-case hourly emission rate for the proposed emission unit.
4. For the proposed emission unit, calculate the acceptable number of hours of operation for a 12-month period by dividing the annual allowable emission (result of step # 2) by the worst-case emission rate (result of step # 3).
5. The applicant must provide a cost analysis for the technically feasible control technologies based upon the acceptable number of hours of operation determined in step # 4. Once the cost (dollars per ton of pollutant removed) of the control technology is determined, it should be compared to the cost of any like/similar sources that have installed the same control equipment. If the costs are comparable, then the control technology should not be eliminated based on economics, even at the reduced number of hours of operation. If the cost analysis justifies economic unfeasibility, the hours of operation determined by this method becomes the BACT "control".

In the case of combustion turbines used to produce electricity, it is sometimes necessary to place a limitation on the hours of operation for the entire project or

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installation. A limit on the total number of hours of operation available in a year is necessary when the sum of the number of hours of operation for all turbines exceeds 8,760 hours. Without a limit on the total annual available hours of operation, an installation could operate as a baseload installation by cycling each combustion turbine. If a limit on the total available annual hours of operation is necessary, an appropriate number would be in the range of 60 percent of a year (60 % of 8,760 hours, or 5,256 hours). The project or installation limit on the total available annual hours of operation is at the discretion of the Air Pollution Control Program.

This policy memo outlines the general procedure of the permitting staff in calculating an hours of operation limitation in conjunction with a BACT analysis. Any hours of operation limitation placed on an installation must be in compliance with all applicable law, rules, and regulations.

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